

A College Adopts a New Engineering Curriculum

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Engineering Core Curriculum
UNIFORM FRESHMAN YEAR

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
Appl. Math. 152	Calculus I	4	4
Appl. Math. 153	Calculus II	4	4
Chem. 102-103	General Chemistry	4	4
Eng. 101ab	Engineering Mechanics	4	4
Gr. Sci. 100, 101	General Science	4	4
Gr. Sci. 102	Humanities	4	4
Mech. 140	Mechanics	4	4

Engineering Sophomore Year

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
Appl. Math. 146	Calculus III	4	4
Appl. Math. 147	Differential Equations	4	4
Appl. Math. 148	Statistics	4	4
Mech. 142 and 143	Mechanics (for EE's and ME's)	4	4
or Mech. 144	Elementary Physics	4	4
Physics 117-118	Physics	4	4
CE 151, 152 and 153	Electrical Engineering	4	4
or M.E. 151-152	Mechanical Engineering	4	4
M.E. 171 or M.E. 172	Thermodynamics	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 151	Electrical Engineering	4	4
CE 152	Electrical Engineering	4	4
CE 153	Electrical Engineering	4	4
CE 154	Electrical Engineering	4	4
CE 155	Electrical Engineering	4	4
CE 156	Electrical Engineering	4	4
CE 157	Electrical Engineering	4	4
CE 158	Electrical Engineering	4	4
CE 159	Electrical Engineering	4	4
CE 160	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 161	Electrical Engineering	4	4
CE 162	Electrical Engineering	4	4
CE 163	Electrical Engineering	4	4
CE 164	Electrical Engineering	4	4
CE 165	Electrical Engineering	4	4
CE 166	Electrical Engineering	4	4
CE 167	Electrical Engineering	4	4
CE 168	Electrical Engineering	4	4
CE 169	Electrical Engineering	4	4
CE 170	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 171	Electrical Engineering	4	4
CE 172	Electrical Engineering	4	4
CE 173	Electrical Engineering	4	4
CE 174	Electrical Engineering	4	4
CE 175	Electrical Engineering	4	4
CE 176	Electrical Engineering	4	4
CE 177	Electrical Engineering	4	4
CE 178	Electrical Engineering	4	4
CE 179	Electrical Engineering	4	4
CE 180	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 181	Electrical Engineering	4	4
CE 182	Electrical Engineering	4	4
CE 183	Electrical Engineering	4	4
CE 184	Electrical Engineering	4	4
CE 185	Electrical Engineering	4	4
CE 186	Electrical Engineering	4	4
CE 187	Electrical Engineering	4	4
CE 188	Electrical Engineering	4	4
CE 189	Electrical Engineering	4	4
CE 190	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 191	Electrical Engineering	4	4
CE 192	Electrical Engineering	4	4
CE 193	Electrical Engineering	4	4
CE 194	Electrical Engineering	4	4
CE 195	Electrical Engineering	4	4
CE 196	Electrical Engineering	4	4
CE 197	Electrical Engineering	4	4
CE 198	Electrical Engineering	4	4
CE 199	Electrical Engineering	4	4
CE 200	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 201	Electrical Engineering	4	4
CE 202	Electrical Engineering	4	4
CE 203	Electrical Engineering	4	4
CE 204	Electrical Engineering	4	4
CE 205	Electrical Engineering	4	4
CE 206	Electrical Engineering	4	4
CE 207	Electrical Engineering	4	4
CE 208	Electrical Engineering	4	4
CE 209	Electrical Engineering	4	4
CE 210	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 211	Electrical Engineering	4	4
CE 212	Electrical Engineering	4	4
CE 213	Electrical Engineering	4	4
CE 214	Electrical Engineering	4	4
CE 215	Electrical Engineering	4	4
CE 216	Electrical Engineering	4	4
CE 217	Electrical Engineering	4	4
CE 218	Electrical Engineering	4	4
CE 219	Electrical Engineering	4	4
CE 220	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 221	Electrical Engineering	4	4
CE 222	Electrical Engineering	4	4
CE 223	Electrical Engineering	4	4
CE 224	Electrical Engineering	4	4
CE 225	Electrical Engineering	4	4
CE 226	Electrical Engineering	4	4
CE 227	Electrical Engineering	4	4
CE 228	Electrical Engineering	4	4
CE 229	Electrical Engineering	4	4
CE 230	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 231	Electrical Engineering	4	4
CE 232	Electrical Engineering	4	4
CE 233	Electrical Engineering	4	4
CE 234	Electrical Engineering	4	4
CE 235	Electrical Engineering	4	4
CE 236	Electrical Engineering	4	4
CE 237	Electrical Engineering	4	4
CE 238	Electrical Engineering	4	4
CE 239	Electrical Engineering	4	4
CE 240	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 241	Electrical Engineering	4	4
CE 242	Electrical Engineering	4	4
CE 243	Electrical Engineering	4	4
CE 244	Electrical Engineering	4	4
CE 245	Electrical Engineering	4	4
CE 246	Electrical Engineering	4	4
CE 247	Electrical Engineering	4	4
CE 248	Electrical Engineering	4	4
CE 249	Electrical Engineering	4	4
CE 250	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 251	Electrical Engineering	4	4
CE 252	Electrical Engineering	4	4
CE 253	Electrical Engineering	4	4
CE 254	Electrical Engineering	4	4
CE 255	Electrical Engineering	4	4
CE 256	Electrical Engineering	4	4
CE 257	Electrical Engineering	4	4
CE 258	Electrical Engineering	4	4
CE 259	Electrical Engineering	4	4
CE 260	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 261	Electrical Engineering	4	4
CE 262	Electrical Engineering	4	4
CE 263	Electrical Engineering	4	4
CE 264	Electrical Engineering	4	4
CE 265	Electrical Engineering	4	4
CE 266	Electrical Engineering	4	4
CE 267	Electrical Engineering	4	4
CE 268	Electrical Engineering	4	4
CE 269	Electrical Engineering	4	4
CE 270	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 271	Electrical Engineering	4	4
CE 272	Electrical Engineering	4	4
CE 273	Electrical Engineering	4	4
CE 274	Electrical Engineering	4	4
CE 275	Electrical Engineering	4	4
CE 276	Electrical Engineering	4	4
CE 277	Electrical Engineering	4	4
CE 278	Electrical Engineering	4	4
CE 279	Electrical Engineering	4	4
CE 280	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 281	Electrical Engineering	4	4
CE 282	Electrical Engineering	4	4
CE 283	Electrical Engineering	4	4
CE 284	Electrical Engineering	4	4
CE 285	Electrical Engineering	4	4
CE 286	Electrical Engineering	4	4
CE 287	Electrical Engineering	4	4
CE 288	Electrical Engineering	4	4
CE 289	Electrical Engineering	4	4
CE 290	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 291	Electrical Engineering	4	4
CE 292	Electrical Engineering	4	4
CE 293	Electrical Engineering	4	4
CE 294	Electrical Engineering	4	4
CE 295	Electrical Engineering	4	4
CE 296	Electrical Engineering	4	4
CE 297	Electrical Engineering	4	4
CE 298	Electrical Engineering	4	4
CE 299	Electrical Engineering	4	4
CE 300	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 301	Electrical Engineering	4	4
CE 302	Electrical Engineering	4	4
CE 303	Electrical Engineering	4	4
CE 304	Electrical Engineering	4	4
CE 305	Electrical Engineering	4	4
CE 306	Electrical Engineering	4	4
CE 307	Electrical Engineering	4	4
CE 308	Electrical Engineering	4	4
CE 309	Electrical Engineering	4	4
CE 310	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 311	Electrical Engineering	4	4
CE 312	Electrical Engineering	4	4
CE 313	Electrical Engineering	4	4
CE 314	Electrical Engineering	4	4
CE 315	Electrical Engineering	4	4
CE 316	Electrical Engineering	4	4
CE 317	Electrical Engineering	4	4
CE 318	Electrical Engineering	4	4
CE 319	Electrical Engineering	4	4
CE 320	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 321	Electrical Engineering	4	4
CE 322	Electrical Engineering	4	4
CE 323	Electrical Engineering	4	4
CE 324	Electrical Engineering	4	4
CE 325	Electrical Engineering	4	4
CE 326	Electrical Engineering	4	4
CE 327	Electrical Engineering	4	4
CE 328	Electrical Engineering	4	4
CE 329	Electrical Engineering	4	4
CE 330	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 331	Electrical Engineering	4	4
CE 332	Electrical Engineering	4	4
CE 333	Electrical Engineering	4	4
CE 334	Electrical Engineering	4	4
CE 335	Electrical Engineering	4	4
CE 336	Electrical Engineering	4	4
CE 337	Electrical Engineering	4	4
CE 338	Electrical Engineering	4	4
CE 339	Electrical Engineering	4	4
CE 340	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 341	Electrical Engineering	4	4
CE 342	Electrical Engineering	4	4
CE 343	Electrical Engineering	4	4
CE 344	Electrical Engineering	4	4
CE 345	Electrical Engineering	4	4
CE 346	Electrical Engineering	4	4
CE 347	Electrical Engineering	4	4
CE 348	Electrical Engineering	4	4
CE 349	Electrical Engineering	4	4
CE 350	Electrical Engineering	4	4

Engineering Sophomore Year (Continued)

COURSE	SUBJECT	SEMESTER HOURS	
		FALL	SPRING
CE 351	Electrical Engineering	4	4
CE 352	Electrical Engineering	4	4
CE 353	Electrical Engineering	4	4
CE 354	Electrical Engineering	4	4
CE 355	Electrical Engineering	4	4
CE 356	Electrical Engineering	4	4
CE 357	Electrical Engineering	4	4
CE 358	Electrical Engineering		

WORCESTER, Mass.—“Four years from now may well see Worcester Polytechnic Institute heralded as a true innovator in private higher education,” says George W. Hazzard, the college's president. “On the other hand, you might see me standing down here on Route 9 with my thumb out.”

Mr. Hazzard is partly joking, of course, but he does have reason to wonder what his future holds. Worcester Polytechnic, which he has headed for one year, is about to toss out its entire curriculum and start over. After 18 months of planning and haggling among administrators, faculty and students, the 105-year-old, 2,100-student college has set out to remake itself from a nuts-and-bolts school of engineering to a breeder of scientific humanists who are prepared to bend science directly to social concerns.

The vehicle for this transformation is the “WPI Plan,” which will be formally announced tomorrow. The plan is based on two central themes: A complete change in the standards by which a student's progress is measured, and a belief that attempts by engineering students to solve real world problems—even insoluble ones—have far greater academic value than has yet been recognized.

Until this year a degree at WPI, as at the overwhelming majority of other schools has represented the accumulation of a prescribed number of academic value units, or credits. A course is assigned a certain number of credits, or credit hours as they are called by some schools. Degrees have been awarded on the basis of a student's collection of the proper number of credits in various prescribed areas of study, with the mix of credits determined by the department whose degree the student seeks.

A Fresh Start for Freshmen

But for freshmen beginning at WPI next year, and for each entering class for three years after that there will no longer be “credits” to earn nor will there be prescribed academic programs of courses

that students must pursue for a degree

Each student's course of study will be determined solely by himself and his faculty adviser.

In place of the accumulation of credits as a path to a degree, the WPI Plan will require both a major off-campus project and a comprehensive examination by the end of the student's career at the school. As currently planned, a student can take the comprehensive exam after he has completed the equivalent of three years of work.

Students will have wide latitude in selecting off-campus study projects. A faculty member and 15 students will comprise a study project team that will work on one or more engineering problems posed by such “real world” institutions as business and municipal government. In more limited pilot projects over the past several years, WPI students have aided such companies as American Optical Co. and Heald Machine Co. to solve manufacturing and product engineering problems as part of their work in an engineering economics course. “Several of my students have been hired by companies where they worked on these projects while they were here,” reports William R. Grogan, the dean of undergraduate students who also teaches the course.

To accommodate the emphasis on such projects under the WPI Plan, the school year will be broken into five seven-week terms. One term, to be conducted over the summer, will stress remedial and other preparatory work for students who come to WPI with an inadequate high school education. As an added effect, the seven-week academic periods “are certain to make it easier for poor students to move back and forth between jobs and school with the least possible delaying effect on their progress toward a degree,” said Mr. Grogan.

As currently envisioned, WPI's civil engineering, chemical engineering and mechanical engineering departments will spearhead the changeover to the WPI Plan, through a liaison with Worcester and other towns and with several indus-

(Continued on Page 11)

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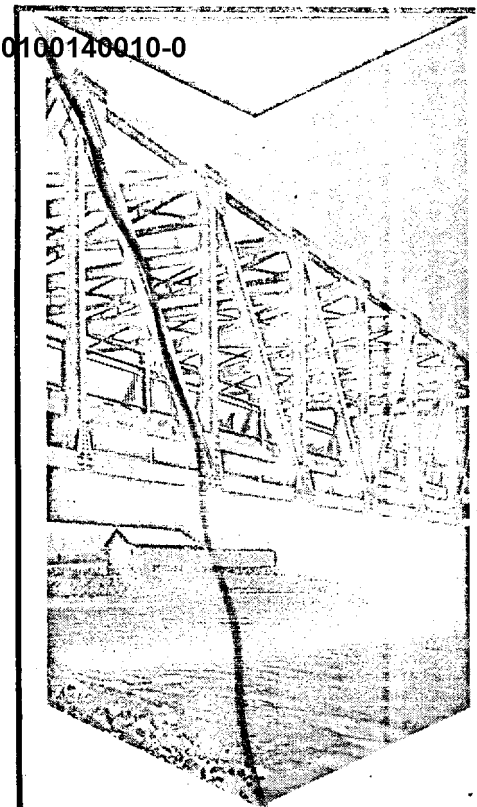
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ENGINEERS, LEGISLATORS & STUDENTS MEET

More than 150 engineers and students were on hand for the October meeting of the Southwestern Chapter of VSPE when four area legislators sat opposite three members of VSPE and an engineering student for an open subject discussion ranging from political strategy to engineering education. Legislators were Sen. J. C. Turk and Delegates Archie Campbell, John Dalton and Garnett Moore. From VSPE were President L. Preston Wade, Vice-President Richard L. Bidwell and Alex M. Davis from the Southwestern Chapter, along with Steve Cumbo, President of the Student Chapter of VSPE. Southwestern Chapter President R. C. Heterick, Jr. was moderator.

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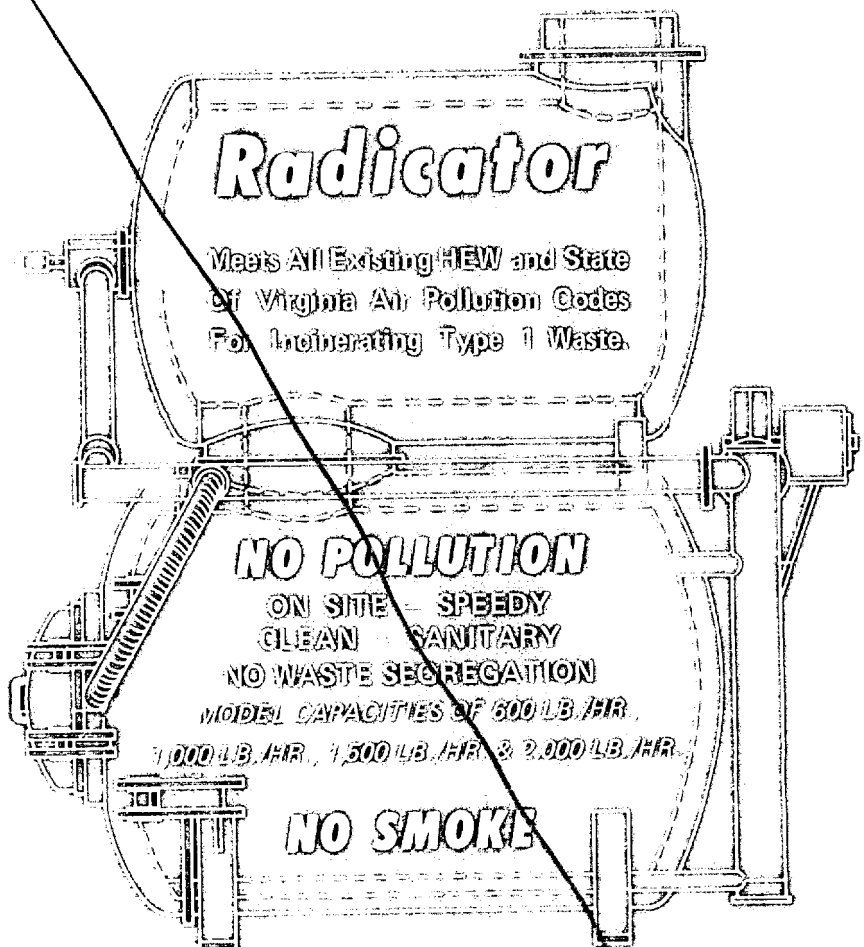
CURRICULUM

tries. Students from their second year onward will be encouraged to become involved in study projects aimed at helping on such issues as air and water pollution, parking and even urban beautification.

While WPI currently has no serious economic problems, the new plan promises to put it on firmer financial footing. With about a quarter of the student body projected to be involved in off-campus study projects each term, college living space and other facilities will be opened to greater full-year use, which should lower costs. And, by working on study projects at business and other facilities

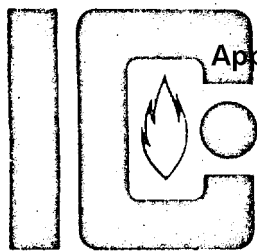
away from the campus, students will be using the equipment on the scene, "which should save WPI some money in outlays for exotic new equipment," says a school spokesman. Faculty members, too, will be grouping for maximum efficiency in teaching basic science courses as they relate to the various engineering disciplines. In math, for example, some subjects, such as advanced algebra, will be taught with once-weekly lectures in a large hall, followed by smaller meetings during the week which an instructor relates the week's lesson to his own group's special field of engineering.

This expected more efficient use of faculty and facilities should let the school



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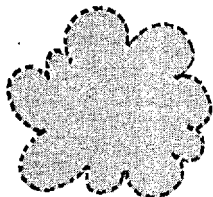
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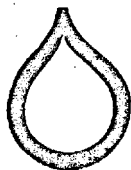
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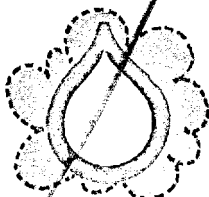
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union up to 500 more students with minimal bricks-and-mortar additions and without enlarging the faculty. It has been projected that the cost of the WPI Plan will cost the school about \$2 million over the next four years, or about 5% of the projected operating budget over that span.

Why did Worcester Polytechnic make the switch? Like many other private schools, WPI is learning that nearby state schools "can do a fine job of turning out graduate engineers using the same kind of classical approach to the subject we have been using all these years," says Romeo L. Moruzzi, a WPI professor of electrical engineering.

"The question then becomes, how much longer should students be willing to pay us \$2,400 a year to do essentially what the University of Massachusetts can do for \$200 a year?" he says. "If private schools can't offer something unique in education, then they really have little reason to exist."

Difficulties Ahead

Nobody at WPI pretends the change will be easy. All agree that the faculty's commitment to the new concept will be crucial. "The usual Ivory-tower professor does not generally qualify" to teach under the WPI Plan, says Carl C. Koontz, who heads WPI's civil engineering department. "The need is for people-oriented engineers, not engineering-oriented people."

And faculty cooperation is far from assured. At a June meeting nearly a third of the school's then 152 faculty members voted to turn down the WPI Plan, though a few of them said they did so because they felt it wasn't radical enough. M. Lawrence Price, dean of faculty, spent the summer screening a list of more than 600 prospective faculty members to replace 10 who left and to add eight, all in the humanities.

Students, too, must react positively to make the plan work. WPI officials are well aware that their plan offers wide latitude to students, and they expect some students to abuse that latitude.

Even if the WPI Plan functions up to expectations, the school may come under fire from outside. "There is some possibility that we could face accreditation problems from our more conservative peers in engineering education, and there's the chance that our graduates under the WPI Plan may want to go on for graduate work at schools which might not honor all their course and project work here," says one liberal arts professor.

Whatever the outcome, little Worcester Polytechnic Institute must be credited with developing a truly innovative approach to higher education and having the grit to implement it. So, if you should happen to spot a middle-aged, bookish-looking man in a cap and gown hitchhiking on U.S. 9 in Worcester a few years hence, pick him up. He'll deserve the lift.